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Docket No.: NEB-164-PUS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Noren et al. EXAMINER: Lundgren

SERIAL NO.: 09/937,187 ART UNIT: 1639

DATE FILED: September 9, 2001

TITLE: Surface Display of Selenocysteine-Containing Peptides

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. §1.132

I hereby declare that:

1. My name is Dr. Christopher J. Noren, Head of the Bioorganic Chemistry Division at New England Biolabs, Inc., assignee for the above-referenced patent application.

2. The biosynthetic machinery required to synthesize host cell surface proteins and surface (coat) proteins of viruses that are obligate parasites of those cells is the same. Surface proteins are known for both viruses and cells. For example, M13 coat protein pIII is a viral protein while flagella protein is a bacterial host protein. Each of these types of proteins can be genetically fused to a selenocysteine expression cassette, which we developed, and the mRNA encoding this is shown in Figure 4 of the above application. The selenocysteine expression cassette that we developed contains a peptide-encoding sequence with an embedded UGA codon,

followed by a SECIS element at a fixed distance from the UGA codon. This construction enables the random peptide library expressed on the surface of a particle (virus or cell) to contain a selenocysteine, thereby providing a unique chemical handle for specific modifications of each displayed peptide in the library.

3. The idea of expressing a random peptide library on the surface of a cell or virion is to provide an affinity-selectable functionality (e.g., a displayed peptide) on the surface of the amplifiable genetic particle (cell or virion), which in turn contains nucleic acid encoding this functionality. Following affinity selection of particles displaying a particular peptide sequence, the particle can be amplified (i.e., grown) and the nucleic acid encoding the individual selected peptide can be recovered and sequenced. While display of random peptide libraries on the surface of a genetically-amplifiable particles (cells and virions) is well known in the art, our inventive claimed contribution is to incorporate a selenocysteine residue into the random peptide library on the surface of the genetic particle. Previous studies on selenocysteine and its mechanism of incorporation have never been applied to random peptide libraries, or to surface display on cells or virions.

4. I further declare that Karen E. Sandman and I are the sole inventors of the present claimed invention. My colleague, Jack Benner, who is named on the Abstract identified by the Examiner from the FASEB meeting published April 23, 1999, vol 13, manages the protein sequencing facility at New England Biolabs Inc. and provided us with protein sequence data at our request. As such he is not an inventor of the present claimed invention.

5. I further declare under penalty of perjury pursuant to laws of the

United States of America that the foregoing is true and correct and that the Declaration was executed by me on:

Dr. Christopher J. Noren Date: July 17, 2006